

In the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application:

1 1. (currently amended) A digital image sensor, comprising:
2 a first two-color photo-detector sensitive to a first total wavelength range, said
3 first two-color photo-detector having a first photo-detector element capable of absorbing light
4 within a first range of wavelengths of said first total wavelength range and a second photo-
5 detector element capable of absorbing light within a second range of wavelengths of said first
6 total wavelength range, said first photo-detector element being in an elevated relation with
7 said second photo-detector element, said first photo-detector element being electrically
8 isolated from said second photo-detector element; and
9 a second two-color photo-detector having a third photo-detector element in an
10 elevated relation with a fourth photo-detector element, said third photo-detector element
11 being electrically isolated from said fourth photo-detector element, said second two-color
12 photo-detector being sensitive to a second total wavelength range different from said first
13 total wavelength range.

1 2. (original) The sensor of Claim 1, further comprising:
2 a substrate, said second photo-detector element being formed within said
3 substrate.

1 3. (original) The sensor of Claim 2, further comprising:
2 a dielectric layer between said first photo-detector element and said second
3 photo-detector element, said dielectric layer electrically isolating said first photo-detector
4 element from said second photo-detector element.

1 4. (original) The sensor of Claim 1, wherein said first photo-detector
2 element is formed of amorphous silicon having a thickness selected to absorb light within
3 said first range of wavelengths and pass light within said second range of wavelengths, said
4 second photo-detector detecting light within said second range of wavelengths passed by said
5 first photo-detector element.

1 5. (original) The sensor of Claim 1, wherein said first and second photo-
2 detector elements are photodiodes.

1 6. (original) The sensor of Claim 5, wherein said photodiodes are PIN
2 photodiodes.

1 7. (original) The sensor of Claim 1, further comprising:
2 a color filter in an elevated relation with said first photo-detector element, said
3 color filter absorbing light within a third range of wavelengths and passing light within said
4 first and second ranges of wavelengths.

1 8. (original) The sensor of Claim 7, further comprising:
2 a transparent metal conductor layer between said color filter and said first
3 photo-detector element.

1 9. (original) The sensor of Claim 1, further comprising:
2 circuitry for driving said first photo-detector element and said second photo-
3 detector element, said first photo-detector element being in an elevated relation with said
4 circuitry.

1 10. (canceled)

1 11. (currently amended) The sensor of Claim ~~10~~ 1, wherein said first two-color
2 photo-detector further comprises a first color filter in an elevated relation with said first
3 photo-detector element of said first two-color photo-detector, said first color filter absorbing
4 light within a third range of wavelengths and passing light within said first and second ranges
5 of wavelengths, said second two-color photo-detector further comprising a second color filter
6 in an elevated relation with said third photo-detector element of said second two-color filter,
7 said second color filter absorbing light within either said first or second ranges of
8 wavelengths, passing light within said third range of wavelengths and passing light within
9 either said first or second ranges of wavelengths not absorbed by said second color filter.

12. (currently amended) The sensor of Claim ~~10~~ 1, wherein said third photo-detector element is capable of accumulating charge upon reception of light within a third range of wavelengths and said fourth photo-detector element is capable of accumulating charge upon reception of light within a fourth range of wavelengths.

13. (original) The sensor of Claim 12, wherein said first photo-detector element produces a first color value, said second photo-detector element produces a second color value, said third photo-detector element produces a third color value and said fourth photo-detector element produces a fourth color value, and further comprising:

a third two-color photo-detector having a fifth photo-detector element in an elevated relation with a sixth photo-detector element, said fifth photo-detector element being electrically isolated from said sixth photo-detector element, said fifth photo-detector element being capable of absorbing light within said first range of wavelengths and producing a fifth color value, said sixth photo-detector element being capable of absorbing light within said second range of wavelengths and producing a sixth color value; and

a fourth two-color photo-detector having a seventh photo-detector element in an elevated relation with an eighth photo-detector element, said seventh photo-detector element being electrically isolated from said eighth photo-detector element, said seventh photo-detector element being capable of absorbing light within said first range of wavelengths and producing a seventh color value, said eighth photo-detector element being capable of absorbing light within said second range of wavelengths and producing an eighth color value.

1 14. (currently amended) A digital image sensor, comprising:
2 a first two-color photo-detector sensitive to a first total wavelength range, said
3 first two-color photo-detector having a first photo-detector element capable of absorbing light
4 within a first range of wavelengths of said first total wavelength range and a second photo-
5 detector element capable of absorbing light within a second range of wavelengths of said first
6 total wavelength range, said first photo-detector element being in an elevated relation with
7 said second photo-detector element; ~~and~~
8 a first dielectric layer between said first photo-detector element and said
9 second photo-detector element;
10 a second two-color photo-detector having a third photo-detector element in an
11 elevated relation with a fourth photo-detector element, said second two-color photo-detector
12 being sensitive to a second total wavelength range different from said first total wavelength
13 range; and
14 a second dielectric layer between said third photo-detector element and said
15 fourth photo-detector element.

1 15. (original) The sensor of Claim 14, further comprising:
2 a substrate, said second photo-detector element being formed within said
3 substrate.

1 16. (original) The sensor of Claim 14, wherein said first photo-detector
2 element is formed of amorphous silicon having a thickness selected to absorb light within
3 said first range of wavelengths, said second photo-detector detecting light within said second
4 range of wavelengths passed by said first photo-detector element.

1 17. (original) The sensor of Claim 14, further comprising:
2 a color filter in an elevated relation with said first photo-detector element, said
3 color filter absorbing light within a third range of wavelengths and passing light within said
4 first and second ranges of wavelengths.

1 18. (original) The sensor of Claim 17, further comprising:
2 a transparent metal conductor layer between said color filter and said first
3 photo-detector element.

1 19. (original) The sensor of Claim 14, further comprising:
2 circuitry for driving said first photo-detector element and said second photo-
3 detector element, said first photo-detector element being in an elevated relation with said
4 circuitry.

1 20-26. (canceled)

1 27. (New) The sensor of Claim 1, wherein said first photo-detector element is
2 formed of amorphous silicon having a first thickness selected to absorb light within said first
3 range of wavelengths and said third photo-detector element is formed of amorphous silicon
4 having a second thickness selected to absorb light within a third range of wavelengths.

- 1 28. (New) The sensor of Claim 14, wherein said first photo-detector element is
2 formed of amorphous silicon having a first thickness selected to absorb light within said first
3 range of wavelengths and said third photo-detector element is formed of amorphous silicon
4 having a second thickness selected to absorb light within a third range of wavelengths.